

Unit 5

Day 3

Factoring Using Integers

Part 3

Sum or Difference of Cubes

$$x^3 + y^3 = (x + y)(x^2 - xy + y^2)$$

$$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$

$$\text{Ex1: } 27a^3 - 8 = \begin{matrix} (x-y)(x^2+xy+y^2) \\ (3a-2)(9a^2+6a+4) \end{matrix}$$

$$\text{Ex2: } 125y^6 + 1 = (5y^2 + 1)(25y^4 - 5y^2 + 1)$$

Substitution:

Ex3:

$$2(x+1)^2 + 17(x+1) + 8$$

$$\text{let } a = x+1$$

$$2a^2 + 17a + 8 \quad \frac{16}{16} \quad 1$$

$$(2a^2 + a) + (16a + 8)$$

$$a(2a+1) + 8(2a+1)$$

$$(a+8)(2a+1)$$

$$(x+1+8)(2(x+1)+1)$$

$$(x+9)(2x+2+1)$$

$$(x+9)(2x+3)$$

Ex4:

$$(y+4)^3(y-2) - 27(y-2)$$

$$\text{let } j = y-2$$

$$k = y+4$$

$$k^3 j - 27j$$

$$j(k^3 - 27)$$

$$j(k-3)(k^2+3k+9)$$

$$(y-2)(y+4-3)((y+4)^2+3(y+4)+9)$$

$$(y-2)(y+1)(y^2+8y+16+3y+12+9)$$

$$(y-2)(y+1)(y^2+11y+37)$$

- HW Wksht 3, pg 42-44 2,9,10,35,36,46-56,63-68 all